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When Does Old Age Begin?

The Role of Attitudes in Age Parameter Placement

by

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WHEN DOES OLD AGE BEGIN? THE ROLE OF ATTITUDES IN AGE PARAMETER

PLACEMENT

Abstract

This research examined the influence of a person's age and their attitudes towards ageing in their placement of age parameters, and in particular, their placement of the beginning of old age. Previous research has shown that as an individual's age increases, their parameter for the beginning of old age is placed further along the lifespan. Two groups (young and middle-aged adults) were recruited to test the hypothesis that an individual's attitude towards old age will mediate the relationship between age and the placement of this age parameter, such that the middle-aged group will hold more negative attitudes towards old age causing them to place the parameter further away. Results showed that middle-aged adults were, in fact, more optimistic towards old age than young adults. Despite this unanticipated finding, the mediation model was tested and found to be valid. Thus, middle-aged people were more optimistic towards old age and this caused them to place the age parameter further down the lifespan. Two possible explanations were suggested: an increase in contact with counterstereotypical older adults, and a possible confounding effect of optimism towards living a long life. Policy implications were discussed.

At the present time, the population age structure of developed countries is undergoing rapid change, with such countries' populations containing proportionately and absolutely more older citizens (Victor, 1991). Understanding how and why we consider people of particular ages to be old is therefore of considerable and increasing importance, especially since being labelled 'old' has great significance for an individual's rights and level of social exclusion in many countries (Higgs, 1995). This study will examine the influence of a person's age and their attitudes toward age and ageing in their placement of age parameters.

Cameron (1969) researched the everyday normative use of the terms young adult, middle-aged, old and aged. In a sample of 571 people, he found age parameters as follows: young adult, 18-25; middle-aged, 40-55; old, 65-80; and aged, 80+. Perhaps most interestingly, Cameron also reported a general tendency for age parameters to be raised with increasing age of the respondent. Other research also shows age-related differences in perceptions of lifespan stages. Drevenstedt (1976) found that older participants perceived old age as starting significantly later than did young and middle aged adults and an Age Concern study showed that 16-24 year olds placed the start of old age at 63 years, whereas adults of 75+ placed the start at 76 years (Age Concern, 1992). This effect also persists in other cultures (e.g., Hori, 1994).

Within Western society, nearly everybody (including older people themselves) appears to hold negative stereotypes about ageing and older people (e.g., Anantharaman, 1984; Collete-Pratt, 1976; Netz & Ben-Sira, 1993). Common stereotypes of old age include: most older people are senile, live in institutions, and no longer care about achievement (Hayslip & Panek, 1993). Much research has focussed upon young people's perceptions of older people. Goldman & Goldman (1981) examined Australian, English, US and Swedish children and young people between the ages of 5 and 25 years old; Hawkins (1996) examined college

students between the ages of 18 and 24 years old; and both Tuckman and Lorge (1953) and Anantharaman (1980) questionned postgraduate students. In each of these studies, older people were evaluated negatively. Even in other, somewhat more collectivistic, cultures, young people were found to hold negative attitudes towards the aged (e.g., Rapoport & Barnett, 1986).

In addition, young people view old age significantly more negatively than do older people (Anantharaman, 1979). In an investigation of the devaluation of old age, Collete-Pratt (1976) found that young participants devalued old age almost twice as much as older participants. Netz and Ben-Sira (1993) found that, although older people held negative stereotypes about "old people", they still perceived their age group significantly more favourably than the younger participants.

There is therefore substantial work on the perception of age parameters, and on stereotypes of old age and older people. However, there has been little work that has attempted to integrate these two areas, either theoretically or empirically. For example, the influence of age on the perception of age parameters may be mediated by an individual's personal attitudes towards ageing and being aged. As described above, people of all ages have negative stereotypes about old age (eg., Collete-Pratt, 1976). These stereotypes, however, may differ in their importance to the respondent's self identity depending upon that person's age. Old age stereotypes are likely to be more salient to a middle-aged person who is closer to joining the "old age" ingroup, than to a younger person; thus increasing the threat to middle-aged adults. Previous research has shown that the combination of negative stereotypes and threat from the outgroup is a very strong predictor of negative attitudes towards that outgroup (Stephan, Ybarra, Martinez, Schwarzald, & Tur-Kaspa, 1998). Thus, as the stereotypes of old age become more threatening in middle age they may translate into more negative personal

attitudes. Findings from a study conducted by Thorson and colleagues (1974) support this hypothesis: middle-aged people had more negative attitudes towards older people than younger adults.

Thus, it is suggested that middle-aged respondents will have more negative attitudes towards old age than younger respondents. As it is undesirable to join a group of which you hold negative attitudes (Tajfel & Turner, 1979), a middle-aged person with negative attitudes towards ageing will avoid the transition into old age. Therefore, they will tend to place the age parameter further down the lifespan than a person who holds less negative attitudes towards old age.

The present study therefore aims to integrate research on perception of age parameters and attitudes toward ageing and older people. The study will ascertain people's perceptions of the age parameters of youth, middle age and old age in two samples: one of young people drawn from a student population; and one of middle-aged people drawn from a population of teachers and lecturers. In particular the study will examine the role of attitudes in the placement of the beginning of old age. The specific hypotheses to be tested are as follows:

Hypothesis One: There will be no differences between young and middle-aged participants on negativity of stereotypes, but middle-aged participants will hold more negative attitudes towards ageing than younger participants.

Hypothesis Two: Attitudes towards old age will mediate the relationship between age and the placement of the parameter for the beginning of old age.

Method

Participants

The sample comprised two groups: a group of younger adults (students) and a group of middle-aged adults (school teachers and university lecturers). These groups were selected to minimise the well-documented confound of educational level on age-related differences in psychological variables (see Hertzog, 1996). The younger adult group approached consisted of 152 first-year psychology students, all of whom participated. In the middle-aged group, 50 teachers were approached and 29 participated; of the 50 lecturers approached, 25 participated. The overall sample size for the middle-aged group was therefore 54, and the overall recruitment rate was 54%.

Materials

A self-report questionnaire was used to gather data. It consisted of three components: measures of age parameters; attitudes towards ageing; and stereotypical characteristics of age. In addition to this, brief demographic details of the participants were obtained: age bracket, gender, education level and current employment.

Section 1: Age Parameters

This section was designed to elicit the perceived age parameters of youth, middle age and old age. It consisted of five questions asking the respondent to indicate the age they considered youth and middle age to begin and end, and old age to begin. For example, "At what age do you consider that old age begins?"

Section 2: Attitudes Towards Ageing

The Reactions to Ageing Questionnaire (RAQ; Gething, 1994) was used to measure personal rather than societal attitudes towards ageing. The most recent form of the RAQ was used, containing 27 items. The participant indicates their level of agreement/disagreement with

each item, all of which are statements about ageing, rated on six point scales ranging from 1 "Strongly Agree" to 6 "Stongly Disagree". Example items are "Old age will be an enjoyable time of life", and "Becoming frail is rarely an issue that concerns me". Gething (1994) reported six underlying factors - anxiety about the future (α=0.78), physical wellbeing (α=.72), psychological wellbeing (α=.62), denial of ageing (α =.68), isolation (α =.49) and activity (α =.20).

Section 3: Stereotypical Characteristics of Age

The aim of this section was to elicit the stereotypes which respondents use to characterise age categories. The format of this section was free response. Guidelines directed the participants to consider the specific psychological characteristics that they associated with people at each of three different stages of the life span (young person, middle-aged person, older person). The participants were asked to write down as many characteristics as they could.

Procedure

The younger adult group were provided with questionnaires during undergraduate laboratory classes. The questionnaires were returned to the researcher at the end of the class. A dual strategy was undertaken to recruit the middle-aged adult group. First, 50 teachers from two secondary schools were provided with a pack containing the questionnaire, a cover letter explaining the purpose of the study, and an envelope in which to return the completed questionnaire. The completed questionnaires were returned via the schools' internal mailing system and collected by the researchers. Second, a random selection of 50 lecturers from the authors' research establishment were recruited by means of a postal survey. A questionnaire pack, identical to that given to the teachers, was sent through the internal mailing system; the

questionnaires were returned by the same system. To minimise order effects, the

questionnaires distributed to particpants were balanced for presentation of sections: thus,

approximately one-sixth of each group received the questionnaire with the sections in the

order 1/2/3, a further sixth in the order 1/3/2 and so on.

Preliminary Data Analysis

Data were analysed using the software package SPSS v6.0 for Windows. Of the

questionnaires completed by the young adult group, nine questionnaires were unusable. Within

the middle-aged group, three questionnaires were unusable. For the purposes of the study, it

was essential that the groups did not overlap with respect to age. When the data were

examined, a natural division fell between the two groups at 30 years. However a few cases in

each group lay upon the wrong side of this boundary, thus these cases were withdrawn from

further analysis. Four younger adult cases (three aged between 30 and 39, one aged between

40 and 49) and six middle-aged adult cases (all aged between 20 and 29) were removed.

Therefore the final number of participants included in the study were as follows: 139 younger

adults (29 male, 110 female) and 45 middle-aged adults (25 male, 20 female). The ages of the

participants in each group are displayed below in Table 1. Examination of

Insert Table 1 about here

demographic information provided during the study indicated that all of the younger adult

group were studying for a tertiary degree and all of the middle-aged adult group held a tertiary

degree, thus satisfying the design requirement of educational-level matching.

Group differences in placement of age parameters were examined by t-test, while

principle components analysis (PCA) was used to explore the factor structure of the RAQ. To

quantify the valence of stereotypes generated by respondents, two raters (undergraduate

psychology students blind to the purpose of the study) used a five point scale to rate each characteristic provided by participants in terms of its positive/negative valence (very negative=-2, negative=-1, neutral=0, positive=1, very positive=2). A satisfactory inter-rater reliability of 84% was achieved. Where disagreement between raters occured, scores were averaged. Each participant was then provided with an overall stereotype score within each of the three age categories, achieved by summing the scores given to every characteristic provided. T-tests were then used to examine group differences in age stereotypes, and to examine group differences in attitude factor scores generated by the PCA of the RAQ. Finally, regression analyses were employed to determine whether attitudes mediated the relationship between age and age parameter placement.

Results

Age Parameters

The means, standard deviations and ranges for the perceived parameters of the three age categories are given in Table 2. There were no differences between male and female respondents for any age parameter (Youth Begins: t= .22, df= 182, p=.82; Youth Ends: t=-.44, df=181, p=.66; Middle Age Begins: t=1.32, df=179, p=.19; Middle Age Ends: t=.98, df=179, p=.33; Old Age Begins: t=1.26, df=180, p=.209). As the table demonstrates, middle-aged adults consistently placed the parameters of all age categories farther along the life span than the younger adult sample. The differences in parameter placement between age groups was significant in every case but the placement of Youth Ends.

Table 2 about here

Bivariate correlational analyses were also performed on the different age parameters. Significant positive correlations were found between Youth Begins and Youth Ends (r=.34,

p<.001), Middle Age Begins and Middle Age Ends (r=.46, p<.001), Middle Age Ends and Old

Age Begins (r=.38, p<.001), and Middle Age Begins and Old Age Begins (r=.25, p<.01). All

other correlations were non-significant.

Principal Components Analysis of RAQ

To examine the factor structure of the RAQ and to reduce the number of attitude items

to a smaller number suitable for multivariate analysis, a PCA was conducted upon the

participants' responses to the 27 items of the RAQ. The data were screened for missing

information and 19 participants were consequently removed from further analyses. There were

no univariate or multivariate outliers. The correlation matrix produced by PCA indicated many

bivariate correlations with r>0.30, suggesting good factorability (Bartlett's test of sphericity =

1577.65, p<.001; Kaiser-Meyer-Olkin measure of sampling adequacy = 0.80).

Initial factor extraction produced eight principal factors with eigenvalues greater than

one. However, the last three factors accounted for relatively small amounts of variance (<5%)

indicating low reliability; the scree plot also revealed a break in the trajectory at four factors.

The lower order factors were carefully examined for ease of interpretation and found to lack

theoretical coherence. Taking these issues into account, five factors were selected for varimax

rotation. Table 3 shows the item loading on each factor and item communalities, factor

eigenvalues and percentage of variance explained by each factor. Interpretation of

Table 3 About here

factors was based upon items that loaded at 0.4 or above. Hence, the first factor was

interpreted as "Optimism Towards Old Age", the second as "Worry about Mental and Physical

Deterioration", the third as "Maintenance of Interpersonal Skills", the fourth as "Worry about

Future Adjustment", and the fifth as "Fear of Death". Following PCA, factor scores were

produced for each participant using the regression method available with the SPSS software. Thus, each participant was provided with five orthogonal attitude factor scores, corresponding to the five factors obtained through PCA.

Hypothesis One: Stereotypes and Attitudes

Following the calculation of the overall valence of the stereotypes generated by each participant, a t-test was conducted to establish if younger and middle-aged adults differed in their evaluation of the psychological characteristics of old people (means=-.50, -1.14 respectively). There was no significant difference between groups (t=-.62, df=1,182, p=.54), thus supporting the first part of hypothesis one. Five t-tests were then performed to establish if there were any significant differences between the two groups on the RAQ attitude factor scores (as factor scores are orthogonal, MANOVA was inappropriate; a Bonferroni adjustment of the overall alpha for the five tests was conducted (α=0.01 per test)). Optimism Towards Old Age was the only attitude factor on which younger and middle-aged adults scored significantly different (t=-3.58, df=1,163, p<.001). However, contrary to expectations, middle-aged adults viewed old age more optimistically than younger adults (means=.49 and -.15, respectively).

Hypothesis Two: Mediating Effect of Attitudes

A test of mediation requires that there be a significant relationship between an independent variable (in this case, age group) and a proposed mediating variable (in this case, RAQ attitude factor scores). As shown in the previous analysis, only the attitude factor Optimism Towards Old Age differed across age groups. Thus, the other attitude variables were not considered as potential mediator variables. Despite the unanticipated finding that

middle-aged adults were more optimistic about old age than younger adults, it was decided to continue with a test of Optimism Towards Old Age as a mediator variable.

To demonstrate a mediation effect, three regression analyses need to be performed: the mediator variable is regressed on the independent variable (Optimism Towards Old Age on age group); the dependent variable is regressed on the independent variable (Old Age Begins on age group); and finally, the dependent variable is regressed on both the independent variable and the potential mediator variable simultaneously (Old Age Begins on age group and Optimism Towards Old Age). Mediation is present if the beta weights for the first two regressions are significant, and if the beta weight for the independent variable is non-significant in the third regression while the beta weight for the mediator remains significant (Baron & Kenny, 1986). The results are shown in Table 4. The first regression of Optimism

Insert Table 4 Here

Towards Old Age on age group was significant. The second regression of Old Age Begins on age group was also significant. Finally, the third regression produced a non-significant beta weight for age group while the beta weight for Optimism Towards Old Age remained significant. Thus, it can be concluded that Optimism Towards Old Age mediates the relationship between age group and the placement of the parameter for Old Age Begins.

Because the direction of the relationship between age group and Optimism Towards Old Age was the opposite to that expected, it was decided to test an alternative mediation model. The model tested the proposal that the placement of the age parameter Old Age Begins mediates the relationship between age group and Optimism Towards Old Age: middle-aged adults push the old age parameter back further than younger adults; because this then reduces the threat of old age to the individual's identity, they feel more optimistic about old age. Baron

and Kenny's (1986) recommended procedures were again followed. With Old Age Begins (mediator) regressed on age group, the beta weight for age group was significant (β=0.24, p<.001; R^2= .05, F(1,180)=10.67, p<.01). With Optimism Towards Old Age (dependent variable) regressed on age group, the beta weight for old age was again significant (β=0.27, P<.001; R^2=.07, F(1,163)=12.84, p<.001). Finally, Optimism Towards Old Age was regressed on both Old Age Begins and age group simultaneously: the beta weight for age group remained significant in this third regression, and indeed was reduced only marginally ($\beta_{AGE\ GRP}$=.24, p<.01; $\beta_{OLD\ AGE}$=.22, p<.01; R^2=.12; F(2,160)=11.15, p<.001). Thus, we can conclude that Old Age Begins does not mediate the relationship between age group and Optimism Towards Old Age.

Discussion

This study examined the age at which young and middle-aged adults believe old age begins, and the role that attitudes play in the placement of this age parameter. Specifically, young adults were found to place the age parameter Old Age Begins significantly earlier in the lifespan than did middle-aged adults, and while attitudes did mediate the relationship between age and age parameter placement, contrary to expectations middle-aged adults were found to have more positive attitudes towards old age than young adults.

There was strong similarity between the age parameters elicited by this study and those found by Cameron (1969), especially for the beginning of old age. Thus, despite the relatively wide range of placements, it appears that people tend to converge on age parameters - and this place of convergence does not appear to have changed much over the past 30 years. Age parameters, at least in the form of an averaged figure, appear to be relatively stable across periods of time. Yet, on an individual level, these age parameters shift as the individual

becomes older. The findings of the present study are consistent with that of previous research in that middle-aged adults placed all but one age parameter significantly further along the lifespan than young adults.

The attitudes towards old age used in this study were ascertained by the RAQ. Whilst a fifth attitude factor (Maintenance of Interpersonal Skills) was identified in the present analysis which did not occur in Gething's (1994) study, overall the similarities between the two analyses are striking. In particular, statements that tapped affect and cognitions regarding physical and mental decline in later life seem to form stable attitude dimensions in both the UK sample from the present study and in Gething's Australian sample. This is a promising finding allowing us to be more confident in the reliability of the RAQ across cultures.

The first hypothesis tested in this study looked at the differences between the stereotypes and attitudes towards old age of young and middle-aged adults. It was hypothesised that there would be no differences in the negativity of the stereotypes, but that middle-aged adults would hold more negative attitudes towards old age than younger adults. The first part of this hypothesis held true: there were no significant differences between young and middle-aged participants on stereotype valency. However, attitudes towards old age did not differ across the age groups as expected: Optimism Towards Old Age was the only RAQ attitude factor to differ between young and middle-aged participants, and contrary to expectations middle-aged participants were more optimistic about old age than the younger sample.

The second hypothesis looked at the mediating effect of attitudes toward old age on the relationship between age and age parameter placement. Originally, it was hypothesised that as people grew older, their attitudes towards old age became more negative. As these attitudes

became more negative, the age parameters would be placed further down the life span.

However, as noted earlier, middle-aged participants held more positive, rather than more

negative, attitudes towards old age than younger participants. Nevertheless, the mediational

analyses found that participants' attitudes did indeed mediate the relationship between age and

age parameter placement. A post-hoc model was then developed, that attitudes may become

more positive because, as people age, they place age parameters further away, thus lowering

threat. However, when this model was tested, no mediation effect was obtained.

What can account for the study findings? First, the middle-aged group may have been

more positive about old age than the young adult group because they know more older

people. It has been demonstrated that the ages of people within an individual's social network

tend to be similar to the age of the individual (Hartup & Stevens, 1997). Thus, the social

networks of middle-aged individuals will be more likely to contain a number of people in the

later stages of life, than will the social networks of young people. Classic social psychological

experiments have shown that exposure to counterstereotypical members of the outgroup (in

this case, older people) can reduce the negativity of the attitudes towards that outgroup (e.g.,

Sherif, 1967). More specifically, Togonu-Bickersteth (1985) showed that adults who resided

in multigenerational households and who had daily contact with older people viewed old age

more positively than adults who did not live in such households. Similarly, Hale (1998) found

that both young and older participants who experienced high levels of contact with older

people held less negative stereotypes and attitudes. Thus, an increase in age may increase the

quantity and quality of contact with older people, which may lead to more positive attitudes

towards old age.

Greater contact and exposure to older people may also explain the second unforeseen

result: people who were optimistic about old age placed the age parameter further away. Most

social psychological experiments in this area show that if the person exhibiting

counterstereotypical information is seen as atypical of a normal outgroup member, they are

seen as an exception and attitudes towards the outgroup do not change (e.g., Fiske, Neuberg,

Beattie & Milberg, 1987; Wilder, Simon & Faith, 1996). Thus, if a middle-aged participant

knows a 65 year old person who displays counterstereotypical behaviour, but is seen as

atypical of a normal older adult, then that person will be seen as an exception to the norm.

However, these social psychological studies use absolute boundaries for outgroups; the

participant cannot change the boundary and cannot change the membership of the "exception".

Thus, it may be that when participants are able to change the membership of atypical outgroup

members they have been exposed to, they show that they are exceptions by excluding them

from the outgroup. In other words, the age parameters are moved to exclude the exception

from the "older adult" outgroup. Thus, our middle-aged participant will move the Old Age

Begins parameter further up the lifespan. Further research is needed to ascertain the validity of

this argument.

An alternative explanation is that the attitude factor Optimism Towards Old Age is

tapping an optimism about living to an advanced age. In other words, people who score highly

on Optimism Towards Old Age also believe they will live longer. The parameter marking the

end of life may act as a cognitive anchor and pull the age parameter Old Age Begins further up

the life span. Certainly, the high correlations between subsequent age parameters indicate a

cognitive linking of the parameters in this way. Unfortunately, as parameters marking the end

of life were not collected in this study, a test of the validity of this interpretation must await

further research.

The limitations of this study are those usually found in this literature. The design was

cross-sectional, allowing for the possibility that the findings are the result of cohort rather than

ageing effects. The groups of adults sampled, although comparing well on education, did not compare well in terms of age range: the 'middle-aged' adult group indeed being something of a contrivance, given that the age range of this group was all of 39 years. Finally, sampling bias may have influenced the study findings in unsuspected ways, with the response rate for the middle-aged adult group being particularly problematic.

The study needs replication, therefore, before any firm conclusions can be drawn, not only because of the limitations in study design, but also because of the unexpected nature of the results. Nevertheless, the study findings remain of considerable interest, due to the demonstration of how optimism about late life can mediate the relationship between age and the placement of age parameters. This finding, if confirmed, has considerable policy implications. If who we perceive to be old is influenced by personal attitudes towards old age, then societal fears may be open to amelioration through psychological interventions aimed at changing these attitudes. In a world that is increasingly concerned about the burden on society of the 'grey' population (e.g., Butler, 1997; Getzen, 1992; Kono, 1996), such an opportunity needs full exploration.

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Table 1. Ages of Participants

Age	10-19	20-29	30-39	40-49	50-59	60-69
Frequency	114	25	15	16	13	1
Percentage	62	13.6	8.2	8.7	7.1	0.5

Table 2. Means, Standard Deviations, and Range of Age Parameters by Age Group.

	Young Adults			Middle-Aged Adults			T-Test of Means
	Mean	Min-Max	SD	Mean	Min-Max	SD	t value, df
YB[a]	13.6	8-20	1.77	14.3	10-19	2.13	t=-2.35, 182*
YE[b]	24.7	14-40	4.96	25.7	16-42	6.45	t=-1.06 181
MAB[c]	36.9	21-52	5.91	40.3	25-50	5.02	t=-3.41, 179***
MAE[d]	57.3	40-69	5.47	62.1	49-70	5.52	t=-5.01, 179***
OAB[e]	63.5	40-80	5.95	66.8	59-75	4.88	t=-3.27, 180**

[a] Youth Begins, [b] Youth Ends, [c] Middle Age Begins, [d] Middle Age Ends, [e] Old Age Begins

* p<.05, ** p<.01, *** p<.001

Table 3. Factor Loadings, Communalities and Eigenvalues of the RAQ.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Communality
1. Old age will be an enjoyable time of life	**0.71**	-0.02	0.24	-0.03	0.15	0.58
2. I worry that I might become senile and lose my mind.	-0.05	**0.73**	-0.08	0.13	0.02	0.57
3. I hope that I might look back on my life with a sense of satisfaction.	0.18	0.01	**0.47**	0.03	0.04	0.25
4. I will be more lonely than I am now.	-0.29	0.23	-0.12	0.10	0.18	0.19
5. Old age brings satisfactions which are not available to the young.	**0.58**	0.17	0.23	0.06	-0.12	0.44
6. Becoming frail is rarely an issue that concerns me	0.21	**-0.68**	0.02	0.12	-0.12	0.53
7. I worry about dying and leaving behind those I love.	-0.12	0.25	0.35	0.04	**0.54**	0.49
8. It worries me that I won't enjoy life as much as I do now.	**-0.70**	0.24	0.05	0.19	0.16	0.61
9. I find the thought of growing old depressing.	**-0.75**	0.23	0.06	-0.01	0.16	0.64
10. Life can get better once you pass middle age.	**0.58**	0.08	0.17	-0.13	-0.04	0.39
11. I will regret the loss of strength and attractiveness.	-0.34	0.31	0.22	0.20	0.22	0.35
12. I don't feel there is much to be scared about becoming an older adult.	**0.58**	-0.30	0.18	-0.06	-0.13	0.48
13. I worry about the loss of independence.	-0.35	0.20	0.28	0.32	-0.12	0.35
14. I expect to be a loving, caring person.	0.14	-0.04	**0.74**	-0.12	0.04	0.59
15. I will be able to accept the death of friends and loved ones as a natural part of life.	0.21	-0.08	0.21	0.02	**-0.76**	0.67
16. I look forward to growing old with someone I love.	0.20	0.00	**0.63**	0.14	-0.06	0.46
17. I worry about becoming frail.	-0.32	-0.32	**0.56**	0.22	0.10	0.52
18. I will become more irritable and grouchy than I am now.	-0.27	-0.04	**-0.41**	**0.62**	0.01	0.63

19. Others may find me difficult to get along with.	-0.20	-0.06	**-0.50**	**0.64**	-0.03	0.70
20. I will become more set in my ways and reluctant to change.	-0.07	0.14	0.09	**0.64**	0.02	0.44
21. I won't like growing old.	**-0.68**	0.26	0.04	0.11	0.18	0.57
22. I do not worry about the thought of becoming senile and losing my mind.	0.04	**-0.74**	-0.02	-0.17	-0.05	0.59
23. I will worry about the loss of loved ones around me.	-0.03	0.13	0.06	0.08	**0.85**	0.75
24. In my old age I will be as enthusiastic about life as I am now.	**0.55**	-0.15	0.24	-0.23	0.02	0.44
25. There is a lot to look forward to in regard to being old.	**0.73**	-0.08	0.30	-0.17	-0.02	0.66
26. I won't feel as safe on my own as I do now.	-0.10	0.13	0.16	**0.65**	0.08	0.48
27. I am concerned who will care for me if I become frail.	-0.04	**0.51**	0.04	**0.49**	0.26	0.57
% of variance	23.8	11.3	6.7	5.1	4.6	-
Eigenvalue	6.43	3.06	1.82	1.39	1.23	-

Table 4. Mediation Regression Analysis: Optimism Towards Old Age (Mediator), Age Group

(Independent Variable - IV), and Old Age Begins (Dependent Variable - DV).

Mediator (Optimism Towards Old Age) regressed on IV (Age Group)

Variable	Beta Weight	R^2	F Value(df), p
Age Group	.27***	.07	12.84 (1, 163); p<.001

DV (Old Age Begins) regressed on IV (Age Group)

Variable	Beta Weight	R^2	F Value(df), p
Age Group	.24***	.05	10.67 (1,180); p<.01

DV (Old Age Begins) regressed on IV (Age Group) & Mediator (Optimism Toward Old Age)

Variable	Beta Weight	R^2	F Value(df), p
Age Group	.14		
Optimism	.22**	.09	7.65, df=2,160, p<.001

** p<.01, *** p<.001